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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 09/900,507 Confirmation No.: 4180
Applicant(s): Oleynick et al.
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Art Unit: 2833
Examiner: Leon, E.
Title: Universal Serial Bus Electrical Connector
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Customer No.: 29,683

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Appeal Brief

Sir:

This is an appeal brief in regard to the final rejection of claims in the above-identified patent application. A Notice of Appeal was mailed to the USPTO on September 24, 2003. This brief is being filed in triplicate as required by 37 C.F.R. §1.192. The fee under 37 C.F.R. §1.17(c) is enclosed. Please charge deposit account 50-1924 for any fee deficiency.

I. Real Party In Interest

The real party in interest is FCI Americas Technology, Inc.

II. Related Appeals and Interferences

There are no directly related appeals or interferences regarding this application.

III. Status Of Claims

Claims 1-12 and 14-34 are pending in this application. Claims 1-12 and 14-34 have been rejected by the Examiner. The rejection of Claims 1-12 and 14-34 is appealed.

IV. Status Of Amendments

Since the final rejection of 6/26/2003 no amendments have been filed.

V. Summary of the Invention

An electrical connector (10) comprising electrical contacts (14) including signal contacts (58) and power contacts (60) (page 9, lines 20-21); and a housing (12) having the electrical contacts connected to the housing. The housing has at least two vertically arranged electrical plug receiving areas (46, 48) (page 7, lines 22-24) (see Figs. 2 and 4). The signal contacts (58) extend into the receiving areas (46, 48) in a universal serial bus (USB) electrical conductor location configuration (page 12, lines 4-11). The power contacts (60) extend into the receiving areas on respective sides of the receiving areas that are opposite the signal contacts in each receiving area (page 11, lines 6-10). In each receiving area

the signal contacts (58) are located along only a first one of the sides and the power contacts (60) are located along only a second one of the sides opposite the first side (see Fig. 2).

A universal serial bus (USB) electrical connector plug (80) (see Figs. 5A and 5B) can be inserted in the connector. The plug (80) comprises a signal contact supporting deck (88); electrical signal conductors (92) directly stationarily attached to a first exterior side of the supporting deck; and electrical power conductors (96) directly stationarily attached to an opposite second exterior side of the supporting deck (page 13, lines 5-13). The supporting deck is sized and shaped to be inserted into a supporting deck receiving aperture (46, 48) of the USB electrical connector receptacle. The electrical signal conductors are aligned in a USB contact array configuration. The conductors on the supporting deck comprise the first side having only the signal conductors and the second side having only the power conductors (page 15, line 28 - page 16, line 6).

VI. Issue

1. Are claims 1-12 and 14-34 unpatentable under 35 U.S.C. §103(a) over Wu (US 6027375) in view of Davis et al. (US 5295843)?

VII. Grouping of Claims

The claims do not stand or fall together. In accordance with 37 C.F.R. §1.192(c)(7) the reasons why Appellant believes the

claims to be separately patentable are explained in the argument section below.

VIII. Argument

Claim 1 claims an electrical connector with at least two vertically arranged plug receiving areas. In each receiving area the signal contacts are located along only a first one of the sides of the receiving area and the power contacts are located along only a second one of the sides of the receiving area opposite the first side. In Davis et al. the socket has both signal contacts 4 and power contacts 6 on a bottom side of the divider 7 in the passage 26, and signal contacts 5 and power contacts 6 on the top side of the divider 7 in the passage. There is no disclosure or suggestion of one side of the receiving area having only signal contacts and the opposite side of the receiving area having only power contacts. Thus, the suggestion to combine Davis et al with Wu merely would result in Wu having two plug receiving areas; each receiving area having power contacts and signal contacts on both opposing sides similar to Davis et al. Claim 1, on the other hand, calls for each receiving area having the signal contacts located along only a first one of the sides of the receiving area and the power contacts located along only a second one of the sides of the receiving area opposite the first side. This is not disclosed or suggested in the cited art.

The examiner has stated that:

"In response to Applicant's arguments regarding Claims 1, 11, 18 and 34 that the references do not show the power contacts extending into the other of the receiving areas opposite to the signal contacts, the contacts being located only in opposite sides, Applicant's attention is directed to Fig. 1 of Wu, in which the power (5) and signal (6) contacts are arranged only in sides opposite to each other. Applicant is reminded that in the Wu reference the power contacts (5) are arranged in an upper side only and the signal contacts (6) are arranged in a lower side only. By combining this arrangement with the teaching of Davis et al. of having the signal contacts and the power contacts extending into the same receiving area, the power and signal contacts of Wu would be kept in the same opposite arrangement but in the same receiving area as taught in Davis et al. This combination is believed to read in Applicant's claims."

However, in Fig. 1 of Wu (seen better in Fig. 3), the contacts 5, 6 are not in the same receiving area; they are in two separate chambers 21, 22 (see Fig. 5 of Wu also). In Wu, the contacts 5, 6 are not opposite each other as the examiner has stated. Nowhere in Wu is there a disclosure or suggestion of contacts 5, 6 being opposite each other. Wu merely discloses the contacts 5,6 being in different chambers 21, 22. Thus, as noted above, even if the teachings of Davis et al. were combined with Wu, there still is no disclosure or suggestion of two vertically arranged plug receiving areas; each receiving area having the signal contacts located along only a first one of the sides of the receiving area and the power contacts are located along only a second one of the sides of the receiving area opposite the first side. The features of claim 1 are not disclosed or suggested in the art of record. Therefore, claim 1 is patentable and should be allowed.

Claims 2-6 and 8-10 stand or fall with claim 1.

Claim 7 claims that the electrical contacts extending into a first one of the plug receiving areas are arranged as a substantially mirror image to the electrical contacts extending into a second one of the plug receiving areas. This feature, in combination with the feature of, in each receiving area, the signal contacts being located along only a first one of the sides and the power contacts are located along only a second one of the sides opposite the first side is not disclosed or suggested in the art of record. Therefore, claim 7 is patentable and should be allowed.

Claim 11 claims a USB connector with a plurality of USB plug receiving areas. The housing has a housing section between two of the receiving areas. The power contacts extend into the receiving areas only from the housing section between the receiving areas. The signal contacts extend into the receiving areas only along sides of the receiving areas opposite the housing section. Similar to the explanation given above with respect to claim 1, the suggestion to combine Davis et al with Wu merely would result in Wu having two plug receiving areas; each receiving area having power contacts and signal contacts on both opposing sides similar to Davis et al. Claim 11, on the other hand, recites that the power contacts extend into the two receiving areas only from the housing section and the signal contacts extend into the receiving areas only along sides of the receiving areas opposite the housing section. The features of claim 11 are not disclosed or suggested in the art of record. Therefore, claim 11 is patentable and should be allowed.

Claims 12, 15 and 17 stand or fall with claim 11.

Claim 14 claims that the signal and power contacts extend into a first one of the receiving areas and are arranged as a substantially mirror image of the signal and power contacts extending into a second one of the receiving areas. This feature, in combination with the feature of the power contacts extending into the receiving areas only from the housing section between the receiving areas and the signal contacts extending into the receiving areas only along sides of the receiving areas opposite the housing section, is not disclosed or suggested in the art of record. Therefore, claim 14 is patentable and should be allowed.

Claim 16 claims that the electrical signal contacts and the electrical power contacts in the two receiving areas are arranged as substantially mirror images of each other. This feature, in combination with the feature of the power contacts extending into the receiving areas only from the housing section between the receiving areas and the signal contacts extending into the receiving areas only along sides of the receiving areas opposite the housing section, is not disclosed or suggested in the art of record. Therefore, claim 16 is patentable and should be allowed.

Claim 18 claims an electrical connector with two plug receiving areas. Signal contacts in the first receiving area are located along only a first side of the first receiving area and the power contacts in the first receiving area are located along only the second side of the first receiving area. Similar to that stated above with respect to claim 1, in Davis et al. the socket has both signal contacts 4 and power contacts 6 on a bottom side of the divider 7 in the

passage 26, and signal contacts 5 and power contacts 6 on the top side of the divider 7 in the passage 26. There is no disclosure or suggestion of one side having only signal contacts and the opposite side having only power contacts. Thus, the suggestion to combine Davis et al with Wu merely would result in Wu having two plug receiving areas; each plug receiving area having power contacts and signal contacts on both opposing sides similar to Davis et al. Claim 18, on the other hand, recites that signal contacts in the first receiving area are located along only the first side and the power contacts in the first receiving area are located along only the second side. The features of claim 18 are not disclosed or suggested in the art of record. Therefore, claim 18 is patentable and should be allowed.

Claims 19-25 stand or fall with claim 18.

Claim 26 claims a USB receptacle with a plug receiving area which is sized and shaped to receive a plurality of USB plugs with signal contact supporting decks of two of the plugs being located vertically aligned relative to each other and power contact supporting sections of the two plugs being at least partially laterally adjacent each other. This generally corresponds to the embodiment of Fig. 6 in the application (Fig. 7 shows one of the plugs and Fig. 8 shows the other plug). The examiner has not commented on the features of claim 26 other than to state that certain features are not being given patentable weight. The examiner stated:

In response to Applicant's arguments regarding Claims 26 and 29 that the Examiner has not given patentable weight to the limitations "the at least one plug receiving area is sized and shaped to receive the plurality of USB plugs

with signal contact supporting decks of two of the plugs being located vertically offset relative to each other and power contact supporting sections of the two plugs being at least partially laterally adjacent each other", "a first receiving area section sized and shaped to receive a first electrical plug having a signal contact supporting deck and a power contact section vertically offset from the signal contact supporting deck; and a second receiving area section sized and shaped to receive a second electrical plug having a signal contact supporting deck and a power contact section, and wherein at least one of the first and second receiving area sections is sized and shaped to alternatively receive a third electrical plug having a signal contact supporting deck, but not having a power contact section", Applicant is reminded that the electrical plugs are not positively recited since it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex. parte Masham, 2USPQ2d 1647 (1987). Therefore, the limitations regarding the plugs have not been given patentable weight. Applicant is reminded that these claims are directed to the connector receptacle and not to the plugs.

Applicant realizes that "intended use" is not given patentable weight. However, the features recited in claim 26 are not "intended use" recitations. More specifically, the language in claim 26 of "a USB receptacle with a plug receiving area **which is sized and shaped to ...**" is a functional limitation. A function limitation is an attempt to define something by what it does, rather than by what it is. There is nothing inherently wrong with defining some part of an invention in functional terms. A functional limitation **must be evaluated and considered**, just like any other limitation of the claim (see MPEP §2173.05(g)). The examiner, by ignoring a functional limitation in claim 26, has failed to consider the claim as a whole. Nowhere in the art of record is there disclosed or

suggested a USB receptacle with a plug receiving area which is sized and shaped to receive a plurality of USB plugs with signal contact supporting decks of two of the plugs being located vertically aligned relative to each other and power contact supporting sections of the two plugs being at least partially laterally adjacent each other as recited in claim 26. The features of claim 26 are patentable and should be allowed.

Claims 27 and 28 stand or fall with claim 26.

Claim 29 claims an electrical connector with a plug receiving area having two receiving area sections that are adapted to receive two plugs and wherein at least one of the receiving area sections is sized and shaped to alternatively receive a third electrical plug having a signal contact supporting deck, but not having a power contact section. The examiner has not explained where the features of claim 29 are disclosed or suggested in the cited art other than to state that certain features are not being given patentable weight. The examiner's reasoning is noted above with reference to claim 26.

Again, Applicant realizes that "intended use" is not given patentable weight. However, the features recited in claim 29 are not "intended use" recitations. More specifically, the language in claim 29 of "a plug receiving area with two receiving area sections that are adapted to receive ... wherein at least one of the receiving area sections is sized and shaped to ..." is a functional limitation. A function limitation is an attempt to define something by what it does, rather than by what it is. There is nothing inherently wrong

with defining some part of an invention in functional terms. A functional limitation must be evaluated and considered, just like any other limitation of the claim (see MPEP §2173.05(g)). The examiner, by ignoring a functional limitation in claim 29, has failed to consider the claim as a whole. Nowhere in the cited art is there a disclosure or suggestion of a plug receiving area with two receiving area sections that are adapted to receive two plugs and wherein at least one of the receiving area sections is sized and shaped to alternatively receive a third electrical plug having a signal contact supporting deck, but not having a power contact section. The features of claim 29 are not disclosed or suggested in the cited art. Therefore, claim 29 is patentable and should be allowed.

Claims 31 and 32 stand or fall with claim 29.

Claim 30 claims that the at least one plug receiving area is sized and shaped to locate the power contact sections of the first and second electrical plugs laterally adjacent to each other. The features of claim 30 are not disclosed or suggested in the art of record. Therefore, claim 30 is patentable and should be allowed.

Claim 33 claims that the first and second receiving area sections each comprise a deck receiving area for receiving contact supporting decks of the first and second electrical plugs, and a common power contact section receiving area is located between the deck receiving areas. The features of claim 33 are not disclosed or suggested in the art of record. Therefore, claim 33 is patentable and should be allowed.

Claim 34 claims a USB plug wherein the conductors on the supporting deck comprise the first side having only signal conductors and the second side having only power conductors (see Figs. 5A-5C). The examiner has stated:

"With regard to Claim 34, Wu discloses a universal serial bus (USB) electrical connector plug (9) comprising: a signal contact supporting deck (93,98); electrical signal conductors (97) directly stationarily attached to only a first side (98) of the supporting deck (93,98); and electrical power conductors (95) directly stationarily attached to only an opposite second side (93) of the supporting deck (93,98), wherein the supporting deck (93,98) is sized and shaped to be inserted into a supporting deck receiving aperture (21,22) of a USB electrical connector receptacle (1), and wherein the electrical signal conductors (97) are aligned in a USB contact array. See Fig. 5.

Wu doesn't show the electrical signal and power conductors directly stationarily attached to exterior sides of the supporting deck.

Davis et al. discloses a connector plug (1) having electrical signal (4) and power (6) conductors directly stationarily attached to exterior sides of a supporting deck (7). See Fig. 1"

In Wu, the items 93 and 98 are a projection and a shielding enclosure, respectively; not a same deck. The signal conductors 97 in Wu are not stationarily attached to a first side of a support deck; they are inside the shielding enclosure 98 and appear to be deflectable, non-stationary spring contacts. The power contacts 95 in Wu are located inside the projection 93; not on a side of a deck. The contacts 4,6 on the deck 7 of Davis et al. are not stationary; they are movable spring contacts.

Nowhere in Wu or Davis et al., alone or in combination, is there a disclosure or suggestion of a USB plug wherein the conductors on the supporting deck comprise the first side having only the signal conductors and the second side having only the power conductors. The features of claim 34 are patentable and the claim should be allowed.

IX. Conclusion

In view of the arguments presented above, it is respectfully requested that the Examiner's rejections of Claims 1-12 and 14-34 be reversed.

Respectfully submitted,

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APPENDIX

1. An electrical connector comprising:

electrical contacts comprising signal contacts and power contacts; and

a housing having the electrical contacts connected thereto, the housing comprising at least two vertically arranged electrical plug receiving areas, wherein the signal contacts extend into the receiving areas in a universal serial bus (USB) electrical conductor location configuration, wherein the power contacts extend into the receiving areas on respective sides of the receiving areas that are opposite the signal contacts in each receiving area, and wherein in each receiving area the signal contacts are located along only a first one of the sides and the power contacts are located along only a second one of the sides opposite the first side.

2. An electrical connector as in claim 1 wherein the signal contacts comprise spring contact sections extending into the plug receiving areas, tails extending from a bottom side of the housing, and bent sections therebetween.

3. An electrical connector as in claim 2 wherein the spring contact sections of the signal contacts extend into two of the plug receiving areas in opposite directions.

4. An electrical connector as in claim 1 wherein the power contacts comprise spring contact sections extending into the plug receiving areas, tails extending from a bottom side of the housing, and bent sections therebetween.

5. An electrical connector as in claim 4 wherein the spring contact sections of the power contacts extend into two of the receiving areas in respective opposite directions.
6. An electrical connector as in claim 1 wherein the housing comprises a section between two of the plug receiving areas, and wherein the power contacts extend from the section into the two plug receiving areas.
7. An electrical connector as in claim 1 wherein the electrical contacts extending into a first one of the plug receiving areas are arranged as a substantially mirror image to the electrical contacts extending into a second one of the plug receiving areas.
8. An electrical connector as in claim 1 wherein each plug receiving area comprises four of the signal contacts extending thereinto and two of the power contacts extending thereinto opposite the four signal contacts.
9. An electrical connector as in claim 1 further comprising an electrically conductive shell connected to the housing, the shell comprising contacts extending into the plug receiving areas.
10. An electrical connector as in claim 9 wherein the housing comprises projections extending into the receiving areas in a forward direction, portions of the signal contacts extending through cavities along the projections, and ends of the signal contacts being preloaded against sections of the projections.
11. A universal serial bus (USB) electrical connector comprising:

a housing forming a plurality of USB plug receiving areas;

electrical signal contacts connected to the housing, and extending into the receiving areas, arranged for operably electrically connecting to the USB plugs inserted into the USB plug receiving areas; and

electrical power contacts connected to the housing and extending into the receiving areas on respective sides of the receiving areas opposite the signal contacts in each of the receiving areas, wherein the housing has a section between two of the receiving areas, wherein the power contacts extend from the section in opposite directions into the two receiving areas, and wherein the power contacts extend into the two receiving areas only from the housing section and the signal contacts extend into the receiving areas only along sides of the receiving areas opposite the housing section.

12. A universal serial bus electrical connector as in claim 11 wherein the two receiving areas are vertically orientated relative to each other.

13. (Canceled)

14. A universal serial bus electrical connector as in claim 11 wherein the signal and power contacts extending into a first one of the receiving areas are arranged as a substantially mirror image of the signal and power contacts extending into a second one of the receiving areas.

15. A universal serial bus electrical connector as in claim 11 wherein the receiving areas extend into a front side of the housing, and wherein ends of the contacts extend from a bottom side of the housing.

16. A universal serial bus electrical connector as in claim 11 wherein the plug receiving areas are vertically aligned relative to each other, and wherein the electrical signal contacts and the electrical power contacts in the two receiving areas are arranged as substantially mirror images of each other.

17. A universal serial bus electrical connector as in claim 16 further comprising an electrically conductive shell connected to the housing, the shell comprising contact arms which extend into the two receiving areas in opposite directions.

18. An electrical connector comprising:

a housing having two plug receiving areas vertically stacked relative to each other; and

electrical contacts connected to the housing and extending into the two plug receiving areas, the contacts comprising signal contacts and power contacts,

wherein the power contacts extend into the two receiving areas and the signal contacts extend into the two receiving areas, wherein the signal and power contacts in a first one of the receiving areas are arranged in an array with the signal contacts on a first side of the first receiving area being located opposite the power contacts on an opposite second side in the first

receiving area, the array being substantially a mirror image of the signal and power contacts in a second one of the receiving areas, and wherein signal contacts in the first receiving area are located along only the first side and the power contacts in the first receiving area are located along only the second side.

19. An electrical connector as in claim 18 wherein the housing comprises a section located between and separating the two plug receiving areas from each other.

20. An electrical connector as in claim 19 wherein the two plug receiving areas are vertically aligned relative to each other.

21. An electrical connector as in claim 19 wherein the power contacts extend from the section in opposite directions into the two receiving areas.

22. An electrical connector as in claim 21 wherein the signal contacts extend into the first and second receiving areas in respective opposite inward directions.

23. An electrical connector as in claim 18 further comprising an electrically conductive shell connected to the housing, the shell comprising contact arms extending into the two receiving areas from four sides of the connector.

24. An electrical connector as in claim 18 wherein the housing comprises two projections extending towards a front end of the housing above and below a center projection of the housing, and wherein the signal contacts extend through the two

projections and project out of the two projections in opposite directions towards the center projection.

25. An electrical connector as in claim 24 wherein the power contacts extend through and out of the center projection in opposite directions into the two plug receiving areas.

26. A universal serial bus (USB) electrical connector receptacle for receiving a plurality of USB electrical connector plugs, the receptacle comprising:

a housing having at least one plug receiving area; and

electrical contacts connected to the housing, the contacts comprising signal contacts and power contacts,

wherein the at least one plug receiving area is sized and shaped to receive the plurality of USB plugs with signal contact supporting decks of two of the plugs being located vertically aligned relative to each other and power contact supporting sections of the two plugs being at least partially laterally adjacent each other.

27. A universal serial bus electrical connector receptacle as in claim 26 wherein the housing comprises two of the plug receiving areas, the two plug receiving areas being vertically aligned with each other.

28. A universal serial bus electrical connector receptacle as in claim 27 wherein the signal contacts extend into the two receiving areas in a same direction.

29. An electrical connector comprising:

a housing having at least one plug receiving area; and
electrical contacts connected to the housing, the
contacts comprising signal contacts and power contacts,
wherein the at least one plug receiving area comprises:

a first receiving area section sized and shaped to
receive a first electrical plug having a signal
contact supporting deck and a power contact section
vertically offset from the signal contact supporting
deck; and

a second receiving area section sized and shaped to
receive a second electrical plug having a signal
contact supporting deck and a power contact section
vertically offset from the signal contact supporting
deck,

and wherein at least one of the first and second
receiving area sections is sized and shaped to
alternatively receive a third electrical plug having a
signal contact supporting deck, but not having a power
contact section.

30. An electrical connector as in claim 29 wherein the at
least one plug receiving area is sized and shaped to locate
the power contact sections of the first and second electrical
plugs laterally adjacent to each other.

31. An electrical connector as in claim 30 wherein the first
and second receiving area sections are vertically aligned with
each other.

32. An electrical connector as in claim 29 wherein the signal contacts and the power contacts extend into the first receiving area section in opposite directions.
33. An electrical connector as in claim 29 wherein the first and second receiving area sections each comprise a deck receiving area for receiving contact supporting decks of the first and second electrical plugs, and a common power contact section receiving area is located between the deck receiving areas.
34. A universal serial bus (USB) electrical connector plug comprising:
 - a signal contact supporting deck;
 - electrical signal conductors directly stationarily attached to a first exterior side of the supporting deck; and
 - electrical power conductors directly stationarily attached to an opposite second exterior side of the supporting deck, wherein the supporting deck is sized and shaped to be inserted into a supporting deck receiving aperture of a USB electrical connector receptacle, wherein the electrical signal conductors are aligned in a USB contact array configuration, and wherein the conductors on the supporting deck comprise the first side having only the signal conductors and the second side having only the power conductors.